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EFFECT OF PLANTING DISTANCES AND TIME OF SHELLING SEED ON PEANUT YIELDS [1]

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1. EFFECT OF PLANTING DISTANCES ON YIELD OF PEANUTS

By J. H. Beattie, F. E. Miller, and R. E. Currin

INTRODUCTION

Peanuts must be spaced in planting so that they can be cultivated in the same manner as other field crops. In commercial practice the intervals between rows vary from a width sufficient for the passage of a mule to as much as 4 feet, the spacing in the rows from 4 to 15 inches.

In 1917 work was undertaken at the Pee Dee experiment station, Florence, S. C., a substation of the State station, to show differences in yield resulting from variations in the width between and the spacing within the rows. The work was continued for three seasons, and although the results apply particularly to the soils and climatic conditions found in the section where it was performed, they are of especial interest to peanut growers in general, as increased yields may often be obtained by practicing closer planting, yet keeping within the limits dictated by cultural methods which must be followed.

[1] The experiments reported in this bulletin were conducted cooperatively by the South Carolina Agricultural Experiment Station, Clemson College, S. C., and the Bureau of Plant Industry of the United States Department of Agriculture.

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EXPERIMENTS IN 1917

One-half acre of soil, classified as Orangeburg sandy loam, with a yellow clay subsoil was set apart for the work in 1917. The land was plowed and fitted in accordance with standard practices and given an application of 500 pounds of ground limestone. Eight hundred pounds per acre of a mixed fertilizer containing 2 per cent nitrogen, 8 per cent phosphoric acid, and 3 per cent potash was then applied and worked into the soil.

The land was marked off into 10 one-twentieth-acre plots, each 16½ by 132 feet (Table 1), and planted to Improved Spanish peanuts. The seed was shelled and planted by hand on April 24, the spacing in the rows being determined by the use of a steel tape.

TABLE 1.—*Peanut-spacing test in 1917*

[Plots one-twentieth of an acre. Crop harvested September 11; picked October 26]

Row and plot	Spacing in rows	Yield of peanuts per plot	Yield of hay per plot	Yield of peanuts per acre	Yield of hay per acre
Rows 2½ feet apart:	*Inches*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Plot No. 1	3	52.5	122.0	1,050	2,440
Plot No. 2	6	47.0	155.5	940	3,110
Plot No. 3	9	39.0	112.5	780	2,250
Plot No. 4	12	35.0	116.0	700	2,320
Plot No. 5	15	38.5	105.0	770	2,100
Rows 3 feet apart:					
Plot No. 6	3	43.5	107.5	870	2,150
Plot No. 7	6	39.5	104.5	790	2,090
Plot No. 8	9	39.0	119.0	780	2,380
Plot No. 9	12	31.5	119.0	630	2,380
Plot No. 10	15	26.0	115.5	520	2,310

The cultivation and care of the crop was in accordance with the usual practices, including horse work supplemented by hand hoeing. Because of rainy weather during the latter portion of the season, weeds gained a start which interfered to some extent with the harvesting of the crop. About midseason it was observed that the closer spaced plantings had a distinctly light or more yellowish cast of foliage, while the wider-spaced ones were darker green. This would seem to indicate that the quantity of plant food available is of importance in determining the proper spacing in the rows and to a lesser extent the distance between the rows.

The 3-inch spacing in rows 2½ feet apart gave the highest yield of picked peanuts. A decided decrease in yield in rows the same distance apart occurred where the spacing in the row was 6, 9, 12, or 15 inches. In the rows 3 feet apart the yield from 3-inch spacing was highest, with a constant decrease in the yield of rows with other spacings.

Yields of hay were but slightly affected by the distance between the rows or by the spacing of the plants in the rows. This result was expected, because the plants in the wider-spaced rows spread more, thereby making a greater growth than those which were more crowded.

The average yield of peanuts per acre from the 2½-foot rows was 848 pounds and from the 3-foot rows 718 pounds. The average yield of hay per acre from the 2½-foot rows and the 3-foot rows was 2,444 and 2,262 pounds, respectively.

EXPERIMENTS IN 1918

During the season of 1918 a duplicate experiment was made, the results of which are given in Table 2.

TABLE 2.—*Peanut-spacing test in 1918*

[Plots one-twentieth of an acre]

Row and plot	Spacing in rows	Yield of peanuts per plot	Yield of hay per plot	Yield of peanuts per acre	Yield of hay per acre
Rows 2½ feet apart:	*Inches*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Plot No. 1	3	50.0	94.0	1,000	1,880
Plot No. 2	6	42.0	83.0	840	1,660
Plot No. 3	9	36.0	75.0	720	1,500
Plot No. 4	12	37.0	78.0	740	1,560
Plot No. 5	15	35.0	72.0	700	1,440
Rows 3 feet apart:					
Plot No. 6	3	49.0	94.0	980	1,880
Plot No. 7	6	41.0	81.0	820	1,620
Plot No. 8	9	45.0	83.0	900	1,660
Plot No. 9	12	41.0	75.0	820	1,500
Plot No. 10	15	35.5	62.5	710	1,250

The average yield per acre of peanuts and hay for the 2½-foot rows was 800 and 1,608 pounds, respectively. For the 3-foot rows it was 846 pounds of peanuts and 1,582 pounds of hay. Although the average relation is not the same as in 1917, there is a reduction in yield of hay for the wider spacings. In general, however, the same results were obtained as in 1917.

EXPERIMENTS IN 1919

The same general plan was followed in the work of 1919. Some modifications were made, chiefly in that 470 pounds of fertilizer per acre instead of 800 pounds was employed, and the seed was planted unshelled, being spaced as before. Instead of 1 peanut in a place there were 2 or 3, depending on the number germinating in each pod. The results are given in Table 3.

TABLE 3.—*Peanut-spacing test in 1919*

[Plots one-twentieth of an acre]

Row and plot	Spacing in rows	Yield of peanuts per plot	Yield of hay per plot	Yield of peanuts per acre	Yield of hay per acre
Rows 2½ feet apart:	*Inches*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Plot No. 1	3	25.00	87.5	500	1,750
Plot No. 2	6	18.00	70.0	360	1,400
Plot No. 3	9	13.50	54.0	270	1,080
Plot No. 4	12	14.00	60.0	280	1,200
Plot No. 5	15	15.75	57.0	315	1,140
Rows 3 feet apart:					
Plot No. 6	3	22.00	73.0	440	1,460
Plot No. 7	6	17.50	63.0	350	1,260
Plot No. 8	9	14.00	53.0	280	1,060
Plot No. 9	12	13.00	47.0	260	940
Plot No. 10	15	10.00	35.0	200	700

The average production of peanuts per acre from the 2½-foot rows was 345 pounds and that from the 3-foot rows was 306 pounds. The average yield of hay from the 2½-foot rows was 1,314 pounds and

from the 3-foot rows 1,084 pounds per acre. In general the relative results were the same as those obtained during the two previous seasons. The light yields for 1919 were due to unfavorable weather conditions.

SUMMARY AND CONCLUSIONS

Table 4 gives the average yields with the different spacings for all three years.

TABLE 4.—*Average yields in 1917, 1918, and 1919 of peanuts in rows 2½ and 3 feet apart in which the seed was spaced at various intervals*

[Plots one-twentieth of an acre]

Row and plot	Spacing in rows	Yield of peanuts per acre	Yield of hay per acre	Row and plot	Spacing in rows	Yield of peanuts per acre	Yield of hay per acre
Rows 2½ feet apart:	*Inches*	*Pounds*	*Pounds*	Rows 3 feet apart:	*Inches*	*Pounds*	*Pounds*
Plot No. 1	3	850.00	2,023.33	Plot No. 6	3	763.33	1,830.00
Plot No. 2	6	713.33	2,056.67	Plot No. 7	6	653.33	1,656.67
Plot No. 3	9	590.00	1,610.00	Plot No. 8	9	653.33	1,700.00
Plot No. 4	12	573.33	1,693.33	Plot No. 9	12	570.00	1,606.67
Plot No. 5	15	595.00	1,560.00	Plot No. 10	15	476.67	1,420.00

These experiments indicate that increased yields of peanuts and hay may be obtained through closer planting than is now commercially practiced.

2. EFFECT OF TIME OF SHELLING PEANUT SEED ON GERMINATION AND YIELD

By J. H. BEATTIE, C. J. HUNN, R. E. CURRIN, and E. D. KYZER[2]

INTRODUCTION

The effect of the time of shelling peanut seed on the germination and yield obtained is a matter of considerable importance. If not injurious to the seed, shelling might well be done at convenient times, often months before planting. Because of poor germination and yields of peanuts from certain lots of shelled seed, many observers have concluded that shelling the seed is often injurious, perhaps on account of the time of shelling or the methods employed in separating the peanuts from the shells. Agricultural literature, however, contains few references to experimental work on this subject.

For the purpose of obtaining data which would be of help in this problem a series of field and laboratory experiments was conducted, beginning in 1921 and continuing through 1924. These experiments included trials of lots of seed of known varietal history, shelled at different times throughout the season and planted under uniform conditions. Germinations were recorded and the final yield of each lot was determined.

The actual work began with the season of 1921, when seed stocks of seven varieties were grown at Florence, S. C. This material was used during the winter of 1921–22 for shelling tests, the first field trial of the material shelled at different dates being conducted during

[2] The writers wish to express their thanks to A. M. Jackson, J. D. McCown, and others for assistance in the work here reported.

the growing season of 1922. This and all subsequent work was carried on under as nearly uniform soil and cultural conditions as could be obtained and is believed to be particularly free from variation in these respects.

EXPERIMENTS IN 1922

Seed of seven varieties of peanuts—Jumbo, Virginia Bunch, Virginia Runner, African, Valencia, Spanish, and Improved Spanish—grown at Florence, S. C., in 1921, was shipped to Washington, D. C., in November, immediately after picking, and placed in a wire-cage storage room at the Arlington Experiment Farm, near Rosslyn, Va. This storage was well ventilated and kept at temperatures between 60° and 70° F. About February 1, 1922, the seed was removed to the building at 220 Fourteenth Street SW., Washington, D. C., where it was stored in large galvanized cans. There was sufficient seed for the various shellings, and all the seed had the same treatment up to the time of shelling.

TABLE 5.—*Growing tests in 1922 of seven varieties of peanuts, in which seed shelled on different dates was used*

Variety	Date shelled	Number of seeds planted	Number germinating	Percentage of germination	Yield per acre (pounds)
Jumbo	Feb. 7	384	236	61.45	1,440
	Mar. 6	287	204	71.08	1,125
	Apr. 3	305	211	69.18	2,520
	May 15	356	228	64.04	1,485
Virginia Bunch	Feb. 7	310	238	76.77	1,575
	Mar. 6	341	94	27.56	1,170
	Apr. 3	310	233	75.16	2,115
	May 15	378	291	76.98	1,755
Virginia Runner	Feb. 6	307	227	73.94	1,755
	Mar. 6	297	110	37.03	1,935
	Apr. 3	343	251	73.17	1,935
	May 16	308	250	81.16	1,260
African	Feb. 6	325	243	74.76	1,530
	Mar. 6	303	132	43.56	1,395
	Apr. 3	278	128	46.04	1,147
	May 16	271	207	76.38	1,800
Valencia	Feb. 6	272	226	83.08	1,080
	Mar. 6	269	114	42.37	585
	Apr. 3	265	113	42.64	765
	May 16	289	243	84.08	990
Spanish	Feb. 7	319	282	88.40	675
	Mar. 6	268	197	73.50	900
	Apr. 3	285	207	72.63	765
	May 16	274	240	87.59	562
Improved Spanish	Feb. 6	290	260	89.65	1,260
	Mar. 6	292	145	49.65	922
	Apr. 3	294	171	58.16	855
	May 16	281	253	90.03	742

On February 6 and 7, 1922, sufficient seed of each variety for the planting of two 90-foot rows was shelled. The shelling was done by hand, and only uninjured and reasonably perfect peanuts were retained. No effort was made, however, to select especially large-sized peanuts. All shelled lots were stored in the same cans as the remaining unshelled lots; similarly, other lots were shelled on March 6 and April 3, and the final lots on May 15 and 16, just before the time of planting.

The seed was shipped by express to Florence, S. C., and two 90-foot rows of each lot were planted. All the peanuts were spaced 6

inches apart in rows 32 inches apart. In some cases there was insufficient seed to fill the two rows. All lots of the same variety were placed side by side in order to avoid soil differences. The results are given in Tables 5 and 6.

TABLE 6.—*Germination and yield in 1922 of seven varieties of peanuts from seed shelled on the same dates*

Variety	Percentage of germination from seed shelled—				Yield (pounds per acre) from seed shelled—			
	Feb. 6–7	Mar. 6	Apr. 3	May 15–16	Feb. 6–7	Mar. 6	Apr. 3	May 15–16
Jumbo	61.45	71.08	69.18	64.04	1,440	1,125	2,520	1,485
Virginia Bunch	76.77	27.56	75.16	76.98	1,575	1,170	2,115	1,755
Virginia Runner	73.94	37.03	73.17	81.16	1,755	1,935	1,935	1,260
African	74.76	43.56	46.04	76.38	1,530	1,395	1,147	1,800
Valencia	83.08	42.37	42.64	84.08	1,080	585	765	990
Spanish	88.40	73.50	72.63	87.59	675	900	765	562
Improved Spanish	89.65	49.65	58.16	90.03	1,260	922	855	742
Average	78.29	49.25	62.42	80.03	1,331	1,147	1,443	1,228

These data show that under the conditions of the experiment there is little difference between the germination and yield of peanut seed shelled as early as the 1st of February and that prepared immediately before planting. No explanation is offered in regard to the rather low germination of seed in some lots shelled on March 6.

EXPERIMENTS IN 1923

During the growing season of 1922 stock of the same varieties was grown in increase plots at the Pee Dee station in order to continue the work during the winter of 1922–23 and the growing season of 1923. It was thought advisable to use different stock of the same strains rather than to employ that produced in the testing of the material in the field, as the treatment to which the latter had been subjected might give rise, as the years proceeded, to a cumulative divergence.

The material used for the 1923 work was grown under uniform conditions, and all varieties were identically treated. It was harvested during September, 1922, when at a proper stage of maturity; stacked according to standard practices, and picked during November of the same season. The peanuts were shipped to Washington and stored at the Arlington farm in the same room used the previous year. Early in December, 1922, a quantity of seed of all varieties was removed to the building at the department and stored in galvanized-iron cans.

On December 9 sufficient seed of each variety was shelled for the planting of the rows. In order to avoid difficulties in making computations, 360 peanuts of each lot were counted out, a number sufficient to fill two 90-foot rows, spacing the peanuts 6 inches apart. The shelled seed was stored in muslin bags in the same cans as the unshelled. Subsequent lots were shelled on January 9, February 9, March 9, April 9, 1923, and a final lot was shelled on May 9, just previous to planting. All lots of seed were counted as before and stored in the same cans used for the remaining unshelled stocks.

The temperature of the storage room averaged about 70° F., the same as during the season of 1922. The seed was planted as in 1922. The results are given in Tables 7 and 8.

TABLE 7.—*Growing tests in 1923 of seven varieties of peanuts, in which seed shelled on different dates was used*

Variety	Date shelled	Number of seeds planted	Number germinating	Percentage of germination
Jumbo	Dec. 9, 1922	360	334	92.77
	Jan. 9, 1923	360	340	94.44
	Feb. 9, 1923	360	351	97.50
	Mar. 9, 1923	360	349	96.94
	Apr. 9, 1923	360	342	95.00
	May 9, 1923	360	346	96.11
Virginia Bunch	Dec. 9, 1922	360	328	91.11
	Jan. 9, 1923	360	350	97.22
	Feb. 9, 1923	360	349	96.94
	Mar. 9, 1923	360	349	96.94
	Apr. 9, 1923	360	342	95.00
	May 9, 1923	360	342	95.00
Virginia Runner	Dec. 9, 1922	360	342	95.00
	Jan. 9, 1923	360	348	96.67
	Feb. 9, 1923	360	346	96.11
	Mar. 9, 1923	360	352	97.77
	Apr. 9, 1923	360	355	98.61
	May 9, 1923	360	349	96.94
African	Dec. 9, 1922	360	355	98.61
	Jan. 9, 1923	360	348	96.67
	Feb. 9, 1923	360	348	96.67
	Mar. 9, 1923	360	351	97.50
	Apr. 9, 1923	360	350	97.22
	May 9, 1923	360	342	95.00
Valencia	Dec. 9, 1922	360	343	95.27
	Jan. 9, 1923	360	352	97.77
	Feb. 9, 1923	360	342	95.00
	Mar. 9, 1923	360	347	96.38
	Apr. 9, 1923	360	346	96.11
	May 9, 1923	360	345	95.83
Spanish	Dec. 9, 1922	360	342	95.00
	Jan. 9, 1923	360	348	96.67
	Feb. 9, 1923	360	347	96.38
	Mar. 9, 1923	360	336	93.33
	Apr. 9, 1923	360	345	95.83
	May 9, 1923	360	342	95.00
Improved Spanish	Dec. 9, 1922	360	343	95.27
	Jan. 9, 1923	360	343	95.27
	Feb. 9, 1923	360	347	96.38
	Mar. 9, 1923	360	340	94.44
	Apr. 9, 1923	360	343	95.27
	May 9, 1923	360	339	94.16

TABLE 8.—*Germination of seven varieties of peanuts from seed shelled on the same dates*

Variety	Percentage of germination from seed shelled—					
	Dec. 9, 1922	Jan. 9, 1923	Feb. 9, 1923	Mar. 9, 1923	Apr. 9, 1923	May 9, 1923
Jumbo	92.77	94.44	97.50	96.94	95.00	96.11
Virginia Bunch	91.11	97.22	96.94	96.94	95.55	95.55
Virginia Runner	95.00	96.67	96.11	97.77	98.61	96.94
African	98.61	96.67	96.67	97.50	97.22	95.00
Valencia	95.27	97.77	95.00	96.38	96.11	95.83
Spanish	95.00	96.67	96.38	93.33	95.83	95.55
Improved Spanish	95.27	95.27	96.38	94.44	95.27	94.16
Average	94.71	96.38	96.42	96.18	96.22	95.59

In 1923, as in 1922, there was little difference between the germination of the peanut seed shelled as much as five months before and that shelled near planting time. Because of a misunderstanding, the

yields of the 1923 plantings were not recorded; consequently that phase of the study can not be presented. Field notes indicate that there was little difference in the crops resulting from the early and the late shelled seed.

EXPERIMENTS IN 1924

The work was continued for the season of 1924. During the crop season of 1923 stock of the same varieties and strains was grown at the Pee Dee station under uniform soil and cultural conditions. The material used was the same as that employed during previous years and came from the regular increase plots included in the selection work conducted under the cooperative plan. It was exceptional in that all stocks employed were of known history for several generations.

TABLE 9.—*Growing tests in 1924 of seven varieties of peanuts in which seed shelled on different dates was used*

Variety	Date shelled	Number of seeds planted	Number of germinations June 22	Number of germinations July 3	Percentage of germination July 3
Jumbo	Dec. 10, 1923	360	286	293	81.38
	Jan. 10, 1924	360	246	257	71.38
	Feb. 10, 1924	360	270	273	75.83
	Mar. 10, 1924	360	278	278	77.22
	Apr. 10, 1924	360	242	245	68.05
	May 10, 1924	360	269	270	75.00
Virginia Bunch	Dec. 10, 1923	360	312	312	86.67
	Jan. 10, 1924	360	305	305	84.72
	Feb. 10, 1924	360	315	315	87.50
	Mar. 10, 1924	360	330	332	92.22
	Apr. 10, 1924	360	319	323	89.72
	May 10, 1924	360	252	233	64.72
Virginia Runner	Dec. 10, 1923	360	333	336	93.33
	Jan. 10, 1924	360	319	319	88.61
	Feb. 10, 1924	360	309	313	86.94
	Mar. 10, 1924	360	325	325	90.27
	Apr. 10, 1924	360	302	302	83.88
	May 10, 1924	360	288	283	78.61
African	Dec. 10, 1923	360	326	315	87.50
	Jan. 10, 1924	360	336	312	86.67
	Feb. 10, 1924	360	326	314	87.22
	Mar. 10, 1924	360	332	332	92.22
	Apr. 10, 1924	360	327	334	92.77
	May 10, 1924	360	289	283	78.61
Valencia	Dec. 10, 1923	360	331	320	88.89
	Jan. 10, 1924	360	325	319	88.61
	Feb. 10, 1924	360	319	317	88.05
	Mar. 10, 1924	360	324	323	89.72
	Apr. 10, 1924	360	317	314	87.22
	May 10, 1924	360	294	293	81.38
Spanish	Dec. 10, 1923	360	337	329	91.39
	Jan. 10, 1924	360	348	340	94.44
	Feb. 10, 1924	360	335	328	91.11
	Mar. 10, 1924	360	341	335	93.05
	Apr. 10, 1924	360	336	336	93.33
	May 10, 1924	360	355	343	95.27
Improved Spanish	Dec. 10, 1923	360	310	308	85.55
	Jan. 10, 1924	360	321	314	87.22
	Feb. 10, 1924	360	318	325	90.27
	Mar. 10, 1924	360	330	330	91.67
	Apr. 10, 1924	360	323	325	90.27
	May 10, 1924	360	271	259	71.94

The seed for the 1924 work was picked during the fall of 1923, shipped to Washington as before, and stored in the same ventilated storage room at the Arlington farm. The methods followed in handling the seed were similar in all respects to those employed during previous seasons. Early in December, 1923, sufficient seed for the entire experiment was removed to the building in Washington and stored in cans in the same room as in previous years.

TABLE 10.—*Germination of seven varieties of peanuts from seed shelled on the same dates*

Variety	Percentage of germination from seed shelled—					
	Dec. 10, 1923	Jan. 10, 1924	Feb. 10, 1924	Mar. 10, 1924	Apr. 10, 1924	May 10, 1924
Jumbo	81.38	71.38	75.83	77.22	68.05	75.00
Virginia Bunch	86.67	84.72	87.50	92.22	89.72	64.72
Virginia Runner	93.33	88.61	86.94	90.27	83.88	78.61
African	87.50	86.67	87.22	92.22	92.77	78.61
Valencia	88.89	88.61	88.05	89.72	87.22	81.38
Spanish	91.39	94.44	91.11	93.05	93.33	95.27
Improved Spanish	85.55	87.22	90.27	91.67	90.27	71.94
Average	87.80	85.95	86.70	89.48	86.46	77.94

TABLE 11.—*Yield in 1924 of seven varieties of peanuts from seed shelled on different dates*

Variety	Date shelled	Yield of peanuts (pounds per acre)	Yield of hay (pounds per acre)
Jumbo	Dec. 10, 1923	855.0	6,615.0
	Jan. 10, 1924	990.0	7,065.0
	Feb. 10, 1924	472.5	5,557.5
	Mar. 10, 1924	675.0	5,355.0
	Apr. 10, 1924	765.0	6,412.5
	May 10, 1924	607.5	6,412.5
Virginia Bunch	Dec. 10, 1923	855.0	7,515.0
	Jan. 10, 1924	540.0	6,750.0
	Feb. 10, 1924	675.0	5,895.0
	Mar. 10, 1924	832.5	7,312.5
	Apr. 10, 1924	945.0	7,515.0
	May 10, 1924	765.0	7,155.0
Virginia Runner	Dec. 10, 1923	585.0	6,165.0
	Jan. 10, 1924	855.0	6,360.0
	Feb. 10, 1924	990.0	6,750.0
	Mar. 10, 1924	585.0	5,535.0
	Apr. 10, 1924	855.0	5,625.0
	May 10, 1924	890.0	4,500.0
African	Dec. 10, 1923	675.0	6,165.0
	Jan. 10, 1924	855.0	7,200.0
	Feb. 10, 1924	540.0	6,255.0
	Mar. 10, 1924	450.0	5,670.0
	Apr. 10, 1924	810.0	5,895.0
	May 10, 1924	675.0	5,805.0
Valencia	Dec. 10, 1923	360.0	2,902.5
	Jan. 10, 1924	495.0	2,970.0
	Feb. 10, 1924	472.5	2,677.5
	Mar. 10, 1924	675.0	2,835.0
	Apr. 10, 1924	540.0	2,925.0
	May 10, 1924	630.0	3,015.0
Spanish	Dec. 10, 1923	900.0	2,655.0
	Jan. 10, 1924	900.0	3,240.0
	Feb. 10, 1924	1,080.0	2,565.0
	Mar. 10, 1924	922.5	2,902.5
	Apr. 10, 1924	1,035.0	3,780.0
	May 10, 1924	1,125.0	3,240.0
Improved Spanish	Dec. 10, 1923	1,125.0	3,150.0
	Jan. 10, 1924	1,125.0	3,195.0
	Feb. 10, 1924	1,395.0	2,250.0
	Mar. 10, 1924	1,125.0	3,645.0
	Apr. 10, 1924	1,260.0	3,645.0
	May 10, 1924	1,305.0	3,195.0

On December 10 sufficient seed of each variety for the planting of two 90-foot rows was shelled and placed in muslin bags, which were stored in the same cans as the remaining unshelled seed. Subsequent lots were shelled at monthly intervals until planting time. The last lot was shelled on May 10, and all the lots of seed were shipped by express to Florence, S. C., as before. Planting was done May 20,

the arrangement being similar in all respects to that followed in previous years' work. Germination counts were made June 22 and July 3. Tables 9, 10, 11, and 12 give the results obtained.

TABLE 12.—*Yield in 1924 of seven varieties of peanuts from seed shelled on the same dates*

Variety	Yield (pounds per acre) from seed shelled—					
	Dec. 10, 1923	Jan. 10, 1924	Feb. 10, 1924	Mar. 10, 1924	Apr. 10, 1924	May 10, 1924
Jumbo	855	990	472.5	675.0	765	607.5
Virginia Bunch	855	540	675.0	832.5	945	765.0
Virginia Runner	585	855	990.0	585.0	855	890.0
African	675	855	540.0	450.0	810	675.0
Valencia	360	495	472.5	675.0	540	630.0
Spanish	900	900	1,080.0	922.5	1,035	1,125.0
Improved Spanish	1,125	1,125	1,395.0	1,125.0	1,260	1,305.0
Average	765	822.8	803.5	752.1	887.1	856.8

The results of the 1924 tests are not so well defined as those of previous years and indicate some advantage for the freshly shelled seed. The yields and percentages of germination in 1924, however, are subject to some allowance, as the later plantings happened to be done on better land, and it is thought that the increase in yield was due to this circumstance and not to the later date of shelling. This belief is borne out by the fact that the germination of the earlier shellings was as good as that of the later ones. All through this work it was evidenced that the yield obtained was not entirely in direct proportion to the stand, as the dropping out of some of the plants seems to have given the others more space and a consequent increased yield.

SUMMARY AND CONCLUSIONS

The results of the three years' experiments (1922, 1923, and 1924) are summarized in Table 13.

TABLE 13.—*Average germination (per cent) and yield (pounds per acre) in 1922, 1923, and 1924 of seven varieties of peanuts from seed shelled on different dates*

Variety	December shelling		January shelling		February shelling		March shelling		April shelling		May shelling	
	Germination[1]	Yield[2]	Germination[1]	Yield[2]	Germination	Yield[1]	Germination	Yield[1]	Germination	Yield[1]	Germination	Yield[1]
Jumbo	87.07	855	82.91	990	78.26	956.2	81.75	900.0	77.41	1,642.5	78.38	1,046.2
Virginia Bunch	88.89	855	90.97	540	87.07	1,125.0	72.24	1,091.2	86.62	1,530.0	78.90	1,260.0
Virginia Runner	94.16	585	92.63	855	85.66	1,372.5	75.02	1,260.0	85.22	1,395.0	85.57	1,075.0
African	93.05	675	91.67	855	86.21	1,035.0	77.76	922.5	78.67	978.5	83.33	1,237.5
Valencia	92.08	360	93.19	495	88.71	776.2	76.15	630.0	75.32	652.5	87.09	810.0
Spanish	93.16	900	95.55	900	91.96	877.5	86.62	911.2	87.26	900.0	92.62	843.5
Improved Spanish	90.41	1,125	91.24	1,125	92.10	1,327.5	78.58	1,023.5	81.23	1,057.5	85.37	1,023.5

[1] Two years only [2] One year only.

Table 13 and the other data show that there is no consistent decrease in the germination of the seed or in the yield of peanuts obtained from seed shelled several months before planting time as compared with the germination and yield from seed shelled shortly before planting. It should be remembered that all the seed used in the three years' work was stock resulting from several seasons' selection for vigor and productiveness, and that the shelling was done by hand, no damaged kernels being allowed to remain in the lots prepared for planting. The seed was stored where it was not subjected to sudden or marked changes in temperature and where the moisture conditions were reasonably constant.

When shelling is done some time in advance of planting time the utmost care should be exercised and the shelled seed stored in a dry, moderately cool place. Large galvanized ash cans with lids offer good storage for the shelled seed. Temperature and moisture conditions similar to those of a living room were found to be well adapted to the storage of shelled peanut seed.

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